



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/599,880	02/19/2007	Willibald Dafinger	WAS0813PUSA	5961

22045 7590 12/04/2009
BROOKS KUSHMAN P.C.
1000 TOWN CENTER
TWENTY-SECOND FLOOR
SOUTHFIELD, MI 48075

EXAMINER

CUTLIFF, YATE KAI RENE

ART UNIT	PAPER NUMBER
----------	--------------

1621

MAIL DATE	DELIVERY MODE
-----------	---------------

12/04/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/599,880	Applicant(s) DAFINGER ET AL.	
	Examiner YATE' K. CUTLIFF	Art Unit 1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 August 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6 - 14 & 16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6 - 14 & 16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 October 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of Claims

1. Claims 6 – 14 and 16 are pending.
Claims 1 – 5 and 15 have been canceled
Claims 6 – 14 and 16 are rejected.

Response to Amendment

2. The amendment to claim 13, submitted August 25, 2009 is acknowledged and entered.

Response to Arguments

3. Applicant's arguments, see page 7, filed August 25, 2009, with respect to the 35 USC 112, second paragraph rejection of claim 15 has been fully considered and are persuasive in view of the cancellation of the claim. The 35 USC 112, second paragraph rejection of claim 15 has been withdrawn.
4. Applicant's arguments filed August 25, 2009, with regard to the 35 USC 103(a) rejections of claims 6-14 and claim 16 have been fully considered but they are not persuasive for the reasons set out in the office Action mailed June 4, 2009 and as set out below.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 6 – 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Williams et al. (EP 0985657 A1), in view of Zeyss (WO 01/90042), in view of Roscher et al. (US 4,818,347), in view of Calcagno et al. (US 3,862,216) and further in view of Broz (US 3,904,656); for the reasons set out in the Office Action Mailed June 4, 2009.

9. Applicant states that the Williams reference was discussed in previous responses and would only be discussed as it related to the combination with the Zeyss reference. Applicant respectfully asserts that Zeyss is directed to a totally different synthetic

Art Unit: 1621

method for preparation of vinyl acetate than the Williams reference and for this reason is incompatible with Williams. Applicant discusses the Zeyss process focusing on the ethane conversion to ethylene and acetic acid, with specific comments to the fact that the ethylene feed to the VAM reaction is low. Also, Applicant states that the entire process of Zeyss is loaded with inerts. Concluding that these features show that the process of Zeyss and Williams process are diametrically opposed; thus one skilled in the art would not be motivated to combine the teachings.

Further, Applicant directs the Examiner to the fact that Zeyss does not teach the use of acetic acid in its scrubber.

Furthermore, Applicant respectfully asserts the following:

Finally, there is no indication that the effluents are fed at reactor system pressure to the scrubber, and since the Zeyss process involves CO₂ separation prior to the scrubber, there is every reason to believe that the product gas stream is not fed to the scrubber at system pressure. Again, a rejection cannot be based on the lack of a teaching in the reference. *Evanega*, id.

Applicants are not "merely changing the order of performing the process steps" as asserted by the Office. Feeding the product gas to the scrubber at system pressure requires different process conditions than when CO₂ is first removed, decreasing the pressure. Moreover, Applicants' claims require removal of CO₂ from the recycle gas stream, not the product gas stream from the ethane oxidation reactor, as in Zeyss.

Applicant discusses the fact that Roscher does not teaching scrubbing a product gas stream with acetic acid, but washing the gaseous overhead from a distillation column with acetic acid.

Art Unit: 1621

10. In response to the above arguments, Examiner states that Zeyss was not presented as a process to be combined with the teachings of Williams. Examiner specifically stated that it would have been obvious to one of ordinary skill in the art to, at the time of the present invention was made, to have **modified** the teaching of Williams by subjecting the product stream gas from the reaction of ethylene, acetic acid and oxygen, to a gas scrubber prior to the removal of the condensable products as suggested by Zeyss. The Examiner directed the Applicant to the fact that the Examiner was focusing on step (b) of Zeyss because it related to the process for producing vinyl acetate, where the reaction products were ethylene, acetic acid and oxygen.

In the process of Zeyss there are three apparatus comprise a first reaction zone (1), a second reaction zone (2) and a scrubber column (3) (see page 9, para. 1 & Fig. 1). Applicant asserts that CO₂ is removed prior to the product from the VAM reaction of step (b) being sent to the scrubber (3). The Examiner did not find this teaching in Zeyss. Based on the discussion on page 9 of Zeyss and Fig. 1, CO is removed between zone (1), from the reactants from step (a), before entering into reaction zone (2), the vinyl acetate production step, and not CO₂. With the assertion that CO₂ is removed prior to scrubber entry of the product of step (b), Applicant concludes that there is reason to believe that the product gas stream of Zeyss is not fed to the scrubber at system pressure. The Examiner disagrees with Applicant's conclusion. Zeyss states the following on page 9 in paragraph 2.

In the second reaction zone (2) acetic acid and ethylene are contacted with molecular oxygen-containing gas in the presence of a catalyst active for the production of vinyl acetate. Depending on the scale of the process, the second reaction zone (2) may comprise either a single reactor or several reactors in parallel or in series. A product stream comprising vinyl acetate, water, optionally ethane, gaseous by-products and unreacted acetic acid and ethylene is withdrawn from the second reaction zone (2) and is fed to the scrubber column (3) where a gaseous stream comprising ethylene, and optionally ethane together with inerts, carbon monoxide and carbon dioxide by-products is withdrawn overhead and is recycled to the first reaction zone (1). A liquid stream comprising vinyl acetate, water, unreacted acetic acid and possibly present high boiling products of the process are withdrawn from the base of the scrubber column (3) and vinyl acetate is isolated in state of the art equipment not shown. —

Based upon the above teaching and the fact that Fig. 1 shows that VAM from reaction zone (2) goes directly to reaction zone (3) (scrubber), it would be reasonable for one skilled in the art reviewing these facts to presume that the product gas stream is fed to the scrubber at system pressure. Further, vinyl acetate, water and unreacted acetic acid is removed from the scrubber (3), where vinyl acetate is subsequently isolated; and the ethylene, any ethane, carbon monoxide, and carbon dioxide is withdrawn and recycled to zone (1). However, before reaching zone (1) the CO₂ is removed from the recycle gas stream. (see Fig. 1).

With regards to the Examiners statement that an additional modification of the process of Williams would include the use of acetic acid in the scrubber step suggested by Zeyss, in view of Roscher, is based on the fact that at the time of Applicant's claimed process it was known in the art the acetic acid could be used to isolate vinyl acetate from the gas mixture in a reaction of ethylene with acetic acid and oxygen. Williams

Art Unit: 1621

even teaches that ethylene may be recovered from the gases withdrawn from the reactor by chemical treatment of the gases, wherein the chemical treatment may consist of acetic acid in a scrubber. Even though Roscher and Williams use acetic acid at different steps or under slightly different conditions, their intent is removal of vinyl acetate from the ethylene after a process where vinyl acetate was produced using ethylene, oxygen and acetic acid. Once the vinyl acetate was removed ethylene and other by-products remained.

Applicant is reminded that the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference.... Rather, the test is what the combined teachings of those references would have suggested to those of ordinary skill in the art.” In re Keller, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981). See also In re Sneed, 710 F.2d 1544, 1550, 218 USPQ 385, 389 (Fed. Cir. 1983) (“[I]t is not necessary that the inventions of the references be physically combinable to render obvious the invention under review.”); and In re Nievelt, 482 F.2d 965, 179 USPQ 224, 226 (CCPA 1973) (“Combining the teachings of references does not involve an ability to combine their specific structures.”).

Furthermore, obviousness can be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so. (In re Kahn, 441 F.3d 977, 986, 78 USPQ2d 1329, 1335 (Fed. Cir. 2006)). In this instance, even though the references do not have as their focus ethylene recovery from the process of preparing vinyl acetate, the prior art as a whole suggested that vinyl acetate can be separated from ethylene

Art Unit: 1621

and other by-products using acetic acid; and once this separation occurs, it would be within the purview of one having ordinary skill in the art to recognize that ethylene would be recovered.

11. Applicant respectfully asserts that Calcagno is a completely different process.

Also, that Broz adds nothing to the rejection.

12. In response, these prior art references are directed solely to Applicant's claimed use of the recovered ethylene. Calcagno et al., even though it is teaching a different process, states that it is customary in the prior art to remove the by products from the recycle gases, which contain mostly ethylene, by known purification processes. (see col. 1, lines 20-28). As such if the ethylene of the recycle gas is purified it becomes useful for any other industrial process that uses ethylene in their production process, such as the one set out in Broz where various ethylene glycols are produced. (see col. 1, lines 5-11). The percentage chosen to send to other process appears to operator choice and well within the purview of one skilled in the art. Thus, this limitation continues to be deemed to be obvious absent a showing of unexpected results.

A reference is good not only for what it teaches by direct anticipation but also for what one of ordinary skill in the art might reasonably infer from the teachings. (*In re Opprecht* 12 USPQ 2d 1235, 1236 (Fed Cir. 1989); *In re Bode* 193 USPQ 12 (CCPA) 1976). In light of the forgoing discussion, the Examiner concludes that the subject matter defined by the instant claims would have been obvious within the meaning of 35USC 103(a).

13. Thus, the rejection of claims 6 – 14 and 16 is made FINAL.

Conclusion

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YATE' K. CUTLIFF whose telephone number is (571)272-9067. The examiner can normally be reached on M-TH 8:30 a.m. - 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel M. Sullivan can be reached on (571) 272 - 0779. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1621

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Yaté K. Cutliff/
Patent Examiner
Group Art Unit 1621
Technology Center 1600

/Rosalynd Keys/
Primary Examiner, Art Unit 1621